

8. (Thrice Amended) A method of assigning a function to a product coded for by a nucleotide sequence of a sample nucleic acid, said method comprising:

a) without any intervening bacterial cloning steps, obtaining and expressing one or more members of an oligonucleotide family as individual transcription products in a plurality of recombinant non-bacterial host cells, wherein:

C12 the coding sequences for each individual transcription product encodes an antisense nucleic acid that, when expressed as RNA, binds to mRNA transcribed from a target nucleic acid molecule that comprises the nucleotide sequence of the sample nucleic acid;

the identity of the nucleotide sequence or an encoded product is known, but the function of the nucleotide sequence or encoded product is unknown; and

expression of one or more of the individual transcription products inhibits production of a product of the mRNA; and

b) analyzing phenotypic changes in the resulting host cells to thereby identify a corresponding change in function, whereby, based upon the corresponding change in function, a function is assigned to the nucleotide sequence of the sample nucleic acid.

C13 14. (Amended) The method according to Claim 8, wherein said function is changed directly.

C14 58. (Amended) The method of claim 8, wherein the one or more members of the oligonucleotide family are introduced into expression vectors, which are introduced into the host cells, wherein the expression vectors comprise:

AMENDMENT AND RESPONSE

double-stranded DNA, comprising:

14 a sense strand and an antisense strand, wherein the sense strand codes for an antisense strand that, when expressed as RNA binds to an mRNA sequence transcribed from the target nucleic acid sequence so that expression of a product the target nucleic acid is inhibited; and

means for determining directionality of expression, wherein the product is associated with at least one phenotypic property of a host cell containing the mRNA sequence; and wherein the expression vector is for expression in non-bacterial host cells.

15 62. (Amended) The method of claim 58, wherein the expression vector is a plasmid or a virus for expression in non-bacterial host cells.

64. (Amended) The method of claim 58, wherein the expression vector is transfected directly into mammalian cells.

65. (Amended) The method of claim 8, wherein the sample nucleic acid is genomic DNA, cDNA, an expressed sequence tag (EST) or RNA.

16 66. (Amended) The method of claim 8, wherein the family contains between 3 and 20 members.

67. (Amended) The method of claim 8, wherein each member of the family is designed to inhibit the production of a product of the target nucleic acid molecule.

68. (Amended) The method of claim 8 that is performed in a high throughput format, whereby all members of a family are assessed in a single experiment.

69. (Amended) The method of claim 8 that is performed in a high throughput format, whereby a plurality of different target nucleic acid molecules and/or sample nucleotide sequences are assessed.